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The Relationship of Work Experience to Industrial Arts Teaching

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THE RELATIONSHIP OF WORK EXPERIENCE TO INDUSTRIAL ARTS TEACHING

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INTRODUCTION

Industrial arts was introduced into the high school as "manual training," with the opening of the St. Louis Manual Training School in the year 1880. The school was founded by Mr. Calvin Woodward of Washington University. His idea was to train boys to use their hands and also to understand the processes of the major industries found in their environment (12:156).

The objectives of industrial arts have changed somewhat since this time, but still one objective, that of interest in industry, has remained the same since 1880. According to the American Vocational Association, interest in industry is the first of nine major objectives for improving industrial arts instruction. Interest in industry is the ability "to develop in each pupil an active interest in industrial life and in the methods and problems of production and exchange" (11:12).

It is felt that processes, tools, and the materials of industry are the core of the industrial arts program. If this is truly the case, in what way can industrial arts teachers reflect industry in its truest sense? Perhaps one would be for industrial arts teachers to have work experience in industry.

I. THE PROBLEM

Statement of the problem. It is the purpose of this study (1) to find out how many industrial arts teachers in the State of Washington have had work experience in industry; (2) what type of work experience in industry they have had; (3) is work experience in industry related to their teaching of industrial arts subjects; (4) how many years and/or months teachers have worked in industry; (5) how many average years of teaching experience industrial arts teachers have had; and (6) what are teachers' opinions concerning the contribution of work experience to teaching industrial arts.

Importance of the study. One of the objectives of industrial arts is to expose students to industry. Perhaps one might ask if industrial arts is fulfilling this objective? What can be done to improve teacher education in order to heighten the quality of industrial arts? John L. Feirer states:

> We should require work experience in industrial areas for all industrial arts teachers. It seems desirable that teachers who are to interpret industry acquire some actual experience (5:13).

This study will attempt to answer two major questions: (1) What type of work experience in industry Washington industrial arts teachers have had, and (2) whether work experience in industry is related to their teaching of industrial arts subjects.

Limitations of the study. This study was limited by six factors: (1) the study was restricted to the State of Washington; (2) the study surveyed only junior and senior high school industrial arts teachers; (3) the information received for this study was taken largely from a questionnaire (see Appendix A); (4) the study is limited to teachers teaching during the school year 1968-69; (5) those included in the study were chosen from the Washington Industrial Arts Directory for 1968-69; and (6) limited also in that teachers must be accurate and truthful in answering the questionnaire.

II. DEFINITIONS OF TERMS USED

Building trades. As used in this study, building trades is the construction, maintenance, repair, and alteration of homes and other types of buildings; and consists primarily of journeyman (craftsmen) who generally must have a high level of skill and knowledge of assembly and construction operations.

Industrial arts. As used in this study, industrial arts is that phase of general education which deals with the study of tools, materials, processes, and products of industry; with attitudes; and with appreciation of the problems, opportunities, and requirements of industry.

Industrial education. As used in this study, industrial education is a generic term applying to all types of education related to industry, including industrial arts education, vocational industrial education (trade and industrial education), and much technical education.

Trade and industrial education. As used in this study, trade and industrial education is instruction which is planned to develop basic manipulative skills, safety judgment, technical knowledge, and related occupational information for the purpose of fitting persons for initial employment in industrial occupations and ungrading or retraining workers employed in industry.

Vocational education. As used in this study, vocational education is to provide training, to develop skills, abilities, understandings, attitudes, working habits and appreciations, and to impart knowledge and information needed by workers to enter and make progress in employment on a useful and productive basis.

Work experience in industry. As used in this study, work experience in industry is defined as work experienced by a person receiving an hourly wage or working under a piece rate system doing direct or indirect production work in an industry or craft.

III. ORGANIZATION OF THE REMAINDER OF THE THESIS

The remainder of the thesis is organized and divided into four Chapters. Chapter II involves review of the literature and related studies. The third Chapter presents the methods and procedures used in this study. Presentation and analysis of the data is given in Chapter IV. The summary and conclusion drawn from this study are contained in Chapter V.

CHAPTER II

REVIEW OF THE LITERATURE AND RELATED STUDIES

Pertaining to work experience in industry of industrial arts teachers, little could be found in books, periodicals, and abstracts. There is, however, certain information that was found that shall be presented in two sections, the first being Review of the Literature and the second, Related Studies.

I. REVIEW OF THE LITERATURE

The trend, as far back as 1948, was to have the teacher in industrial education return at various intervals to industry. In an article by Alfred Cox, it was stated that these actual industrial work experiences should be "transferred to school instruction to help better prepare the student to hold his place in industry" (6:397).

There have been several suggestions as to how the colleges can best incorporate work experience within the industrial arts curriculum. In order for these experiences to be initiated Haws states in his article, "Putting 'Industry' into Industrial Arts," that the teachers' colleges must:

> have experiences in industry through summer vacation employment or part-time cooperative programs where they may have firsthand experiences with design, planning, production, and distribution of the products manufactured (10:304).

In support of Haws, a teacher in an opinion study, conducted by the Industrial Arts and Vocational Education magazine suggested that this (training) could very easily be accomplished through summer or part-time employment while attending college. It would be a valuable experience, and help bring a closer relationship between industrial education courses and industry (16:6).

Spence agrees, and states that it would be beneficial "if every college industrial arts teacher would spend a semester in industry every five years" (17:20).

Teachers generally need to return to college to work on advanced degrees and have little time to work in industry. According to the article, "Effective Training of Industrial Arts Teachers," written by Chris Groneman:

> Usually the public school teacher has only the bachelor's degree and it is to his advantage to attend graduate programs during the summer months until he gains his master's degree and then to combine his professional interest with an occasional summer of work in industry. It is this close connection with the professional upgrading and industrial activity that produces the better teacher (9:129).

A good program for summer employment is that offered by the Chrysler Corporation in Detroit, Michigan. Ever since the summer of 1943, they have been working with industrial

arts teachers. The selected teachers are provided with actual working experiences, and have the opportunity of participating in some manufacturing, machining, and assembling of a finished product by actually doing the work themselves. The corporation also arranges for speakers to come in to talk about industrial related topics (2:397).

The major concern of any teacher should be to consider his preparation in the area he is teaching, as well as methods and materials. If industrial work experience helps to better prepare the industrial arts teacher to do a more effective job, then perhaps this should become an educational requirement.

Since the student is one of the major factors in the educational process, it is felt by Dillon that, "Introduction of work experience will give realism to the school curriculum and break the insulation of students from the world of work" (3:11).

In support of Dillon, Gold in his book, Working to Learn, believes that the:

> Role of the school in occupational education is a dual one. It is concerned with a thorough-going orientation to industry and the relationship between the work we do and the lives we lead. It is more meaningful both as it builds attitudes and understandings of the individual and as it invites critical consideration of current work relations (8:69).

Dillon also states that, all children should know the meaning of work, should come to have respect for all types of honest labor, should learn in school and, if possible to some extent out of school, what it feels like to do real work, and should at adolescence begin tentatively to identify themselves with some general idea of future occupational life (3:24).

II. RELATED STUDIES

Four significant studies have been completed that relate to (1) relationship of work experience to success as a teacher and/or (2) the extent of industrial work experience by industrial arts teachers.

The first study, an opinion survey conducted in 1961 by the Industrial Arts and Vocational Education magazine, asked industrial arts supervisors and teachers if they felt that industrial arts teachers should be required to have industrial experience before they are allowed to teach. While 55 percent felt it not necessary that industrial arts teachers have work experience before they are allowed to teach, 45 percent felt it was necessary. Very little percentage of difference was noted between the two groups (16.6)

Ensman, conducted a study in 1957 on factors relating to success in industrial arts teaching, and found that 42 percent of the industrial arts teachers in his study had no work experience while 46 percent reported work of an industrial or service nature. Only four percent reported work experience in other occupations. Eighteen individuals or 16 percent of the group reported over two years experience in industrial or service occupations. Ensman also discovered that no statistically significant difference existed between rated success and the type of work experience reported. He also concluded that no statistically significant difference was found to exist when ratings of teaching success were compared with the amount of work experience reported in occupations outside of teaching (4:105).

The third study, that done by Peterson at Central Washington State College in 1969, noted that eighty-two percent of the Washington industrial arts teachers did not hold a vocational certificate. Seventy percent of the group in his study had trade experience, with carpentry the most prominent trade listed (14:54).

The last study, pertaining to work experience of industrial arts teachers, is that done by Thomas R. Gaines in 1955. He found that industrial arts teachers tend to

seek and find employment in industry in keeping with their training background of a technical and skilled nature. There seems, he reports:

> To be little or no relationship between whether or not industrial arts teachers have work experience in industry and the teaching practices followed regarding:
>
> (a) conservation of student's time in school shop work
>
> (b) project cost and elimination of waste
>
> (c) selection of course content
>
> (d) teaching methods and techniques
>
> (e) industrial shop safety
>
> (f) care and maintenance of equipment
>
> (g) shop housekeeping
>
> (h) shop management (6:112)

Gaines, also found that there is little or no relationship between work experience in industry and teaching practices followed by industrial arts teachers. Hence, "there seems to be little or no relationship between work experience in industry and the related success of industrial arts teachers." The college institutions should, he feels, "remain providing basic skills, knowledge, and opportunities for development of desirable habits that seem necessary for successful teaching." He concludes with a statement that has significance to work experience in industry for industrial arts teachers:

> an industrial arts shop teacher without work experience in industry should be expected to follow teaching practices of a similar nature and attain approximately the same degree of success in teaching as the industrial arts shop teacher who worked in industry (6:113).

III. SUMMARY

The literature investigated has left the impression that work experience in industry is important not only to industrial arts but to the educational system in general.

Whether you encounter this experience in the summer or part-time employment does not seem to matter, but the main thing is to have work experience in industry so that you may relate such things as design, planning, production and distribution to the area you are teaching. Not only would this enrich one's program but it would also better prepare our youth for the world of work.

In contrast, the studies do not seem to significantly support the proposition that industrial arts teachers should have work experience in industry to be an effective or a successful teacher.

CHAPTER III

METHODS AND PROCEDURES

The purpose of this study is to survey industrial arts teachers in the State of Washington, in order to obtain factual data regarding their work experience in industry.

Development of the questionnaire. A tentative questionnaire was drawn up and presented to the thesis committee chairman. Suggestions for revision and clarification were made at this time.

The next procedure used was to select four industrial arts teachers from the Vancouver Public Schools and administer the questionnaire to them. Such things as ease of answering the questions, form of the questions, and time needed to take the questionnaire were criteria asked of these educators. After this period, it was possible to reevaluate and make possible changes.

Next the Vancouver Public Schools supervisor of industrial arts and the principal of Columbia River High School also in Vancouver, were requested to examine and evaluate the questionnaire. At this time it was felt that the questionnaire was suitable for final typing and administering.

The completed questionnaire totalled one oversized page and had been developed in several parts. First, questions to determine background information were included in the questionnaire. Such items as, name of respondent, location of position, and years teaching were asked in this area.

Next, questions pertaining to work experience in industry, dealing with length of experience, type of work and are you vocationally certified, were asked in this section. A copy of the questionnaire may be found in Appendix A.

One of the most important questions for the purpose of this study dealt with whether their work experience in industry was very closely related, somewhat related, or totally unrelated to their teaching of industrial arts subjects.

A final group of questions dealt with statements and their relative value in regard to work experience in industry and teaching industrial arts subjects. Such statements as, makes me conscious of the importance of safety, habits and practices, were set forth and the respondents were requested to rate these as either very important, important, or not very important.

Selection of the population. Since the study pertained only to industrial arts teachers in the State of Washington, the Washington Industrial Arts Directory for 1968-69 was used.

There are many ways of sampling a population. According to Garrett, a random sample is an unbiased cross section of a larger population. His criteria for randomness is (1) every individual in the population or supply has the same chance of being chosen for the sample; and (2) when the selection of one individual in no way influences the choice of another (7:203). The writer felt that a selective sample was adequate for this study. There are approximately 1040 industrial arts teachers in the directory. Every third industrial arts teacher was selected until three hundred were chosen. From this directory addresses were obtainable, thus making it easy to send out the questionnaire.

Administration of the questionnaire. On February 24, 1969, questionnaires and self-addressed stamped envelopes were sent out to three hundred industrial arts teachers. Of this total thirty-nine were sent to the Seattle Public School system. It was necessary to acquire special permission in order for teachers in this district to participate in a study that involves a questionnaire.

A cover letter to the industrial arts teachers was included to explain the nature of the study. A copy of the cover letter can be found in Appendix B.

Follow-up. On March 5, 1969, a follow-up postal card was sent out to one hundred fifteen individuals in the study who had not responded, in order that they might return the questionnaire as soon as possible. A copy of the postal card can be found in Appendix C.

Final analysis of response to the questionnaire. The final date for return of the questionnaire was June 10, 1969. This date was chosen because it was felt ample time had elapsed in collection of the questionnaires. A combined total of 253 questionaires were filled out and returned out of a possible 300, which represents an 84.3 percent response.

CHAPTER IV

PRESENTATION AND ANALYSIS OF THE DATA

The purpose of this Chapter was to present and analyze the data gathered from the questionnaires sent to 300 industrial arts teachers in the State of Washington. The information compiled will be discussed in table form in this Chapter. It should be noted that of the 253 respondents, 26 indicated having no work experience in industry, 178 had worked in industry, while 49 had work experience in industry, plus they hold or have held a valid vocational certificate.

I. RESPONDENTS' AGE UPON GRADUATION FROM COLLEGE

One of the first questions asked in the survey pertained to age upon graduation from college, which is found in Table I. It was divided into three sections: (1) Teachers without work experience; (2) teachers with work experience; and (3) teachers with work experience who hold or have held a valid vocational certificate.

Teachers without work experience ranged between twenty and forty-five years of age upon graduation from college. The largest percentage, 30.9, fell at age

TABLE I

AGE UPON GRADUATION FROM COLLEGE

Age	Teachers without work experience		Teachers with work experience		Teachers with work experience and vocational certificate	
	Number	Percent	Number	Percent	Number	Percent
20	0	0.0	1	.6	1	2.0
21	3	11.6	17	9.6	3	6.1
22	8	30.9	23	12.9	4	8.2
23	2	7.7	22	12.4	6	12.1
24	2	7.7	12	6.6	3	6.1
25	2	7.7	26	14.6	2	4.2
26	2	7.7	21	11.8	6	12.1
27	1	3.8	17	9.6	3	6.1
28	0	0.0	9	5.1	2	4.2
29	1	3.8	4	2.2	4	8.2
30	0	0.0	7	3.9	3	6.1
31	0	0.0	2	1.1	1	2.0
32	0	0.0	2	1.1	0	0.0
33	0	0.0	4	2.2	0	0.0
34	0	0.0	3	1.7	1	2.0
35	0	0.0	1	.6	2	4.2
36	0	0.0	0	0.0	1	2.0
37	0	0.0	1	.6	1	2.0
38	0	0.0	1	.6	0	0.0
41	1	3.8	0	0.0	0	0.0
43	1	3.8	0	0.0	1	2.0
45	1	3.8	1	.6	1	2.0
*	0	0.0	0	0.0	2	4.2
**	2	7.7	4	2.2	2	4.2
Total	26		178		49	

*Has not graduated from college.

**Age not indicated.

twenty-two with an average age upon graduation from college being 25.8 years.

Teachers with work experience ranged from twenty to age forty-five, with the largest percentage, 14.6, falling at twenty-five years of age. The average age upon graduation from college was 24.9 years.

The last category was teachers with work experience in industry who hold or have held a valid vocational certificate. It was discovered that their age ranged from twenty to forty-five years upon graduation from college. Age twenty-three and twenty-six had the highest percent, each with 12.1, for graduation from college, while the average age was 27.2 years. It is interesting to note that 2 of the 49 respondents who are teaching industrial arts subjects have not graduated from college.

In the categories of teachers without work experience, teachers with work experience, and those with experience and holding a vocational certificate, a total of 8 did not respond.

II. RESPONDENTS' TOTAL TEACHING EXPERIENCE

Table II presents information pertaining to total teaching experience by industrial arts teachers in the State

TABLE II

TOTAL TEACHING EXPERIENCE BY
INDUSTRIAL ARTS TEACHERS

Years	Teachers without work experience		Teachers with work experience		Teachers with work experience and vocational certificate	
	Number	Percent	Number	Percent	Number	Percent
0- 1	3	11.6	13	7.3	2	4.1
2- 3	8	30.8	25	14.0	7	14.3
4- 5	4	15.4	21	11.8	5	10.3
6- 7	3	11.6	12	6.7	1	2.0
8- 9	3	11.6	18	10.1	5	10.3
10-11	1	3.8	21	11.8	7	14.3
12-13	1	3.8	17	9.6	6	12.2
14-15	1	3.8	11	6.2	2	4.1
16-17	0	0.0	8	4.5	3	6.1
18-19	0	0.0	13	7.3	6	12.2
20-21	0	0.0	6	3.4	0	0.0
22-23	0	0.0	2	1.2	0	0.0
24-25	1	3.8	1	.5	0	0.0
26-27	0	0.0	1	.5	2	4.1
28-29	0	0.0	0	0.0	1	2.0
30-31	0	0.0	3	1.7	0	0.0
32-33	0	0.0	1	.5	1	2.0
34-35	0	0.0	2	1.2	0	0.0
36-37	0	0.0	2	1.2	1	2.0
*	1	3.8	1	.5	0	0.0
Total	26		178		49	

*Age not indicated.

of Washington. This table was also divided into three categories: (1) Teachers without work experience; (2) teachers with work experience in industry; and (3) teachers with work experience holding a vocational certificate.

Teachers without work experience in industry ranged from one to twenty-five years of teaching experience, while the highest number and percent were recorded at the two-three year column for teaching experience. The average teaching experience for industrial arts teachers without work experience was 5.8 years.

The years indicated for teaching experience was from one to thirty-seven for those teachers with work experience. Fourteen percent in the two-three year column was also indicative of this group, while 10.4 years was the average for teaching experience.

Of the teachers with work experience and a vocational certificate the range was from one to thirty-seven for total years of teaching experience. The largest percentage, 14.3, fell at the two-three and ten-eleven year teaching experience level. The average number of years of teaching experience for this group was 11.9 years.

III. RESPONDENTS' TIME WORKED IN INDUSTRY

Total time worked in industry by industrial arts teachers is shown in Table III. Of those industrial arts

TABLE III

TOTAL TIME WORKED IN INDUSTRY BY INDUSTRIAL ARTS TEACHERS

Months-years	Work experience of I. A. teachers		Work experience of I. A. teachers with vocational certificate	
	Number	Percent	Number	Percent
1- 3 Months	2	1.1	0	0.0
4- 6 Months	3	1.7	1	2.0
7- 9 Months	3	1.7	0	0.0
10-12 Months	2	1.1	0	0.0
1- 2 Years	37	20.8	3	6.0
3- 4 Years	27	15.0	6	12.2
5- 6 Years	35	19.5	8	16.3
7- 8 Years	16	9.0	6	12.2
9-10 Years	13	7.3	5	10.2
11-12 Years	6	3.4	2	4.0
13-14 Years	1	.1	0	0.0
15-16 Years	8	4.5	2	4.0
17-18 Years	1	.6	1	2.0
19-20 Years	2	1.1	3	6.0
21-22 Years	0	0.0	0	0.0
23-24 Years	0	0.0	0	0.0
25-26 Years	1	.6	1	2.0
27-28 Years	0	0.0	1	2.0
29-30 Years	1	.6	1	2.0
31-32 Years	0	0.0	0	0.0
33-34 Years	0	0.0	0	0.0
35-36 Years	0	0.0	1	2.0
No response	20	11.2	8	16.3
Total	178		49	

teachers with only work experience in industry, 158 marked that they had worked from one month to thirty years. Ninety-four or 55.3 percent indicated that they had one to six years of work experience in industry. The average number of years worked in industry was 5.6. Twenty or 11.8 percent of the 178 did not respond to this question.

The industrial arts teachers that stated they hold or have held a valid vocational certificate have a range of four months to thirty-six years of work experience in industry. Twenty-five or 50.9 percent indicated they had worked three to ten years. The average number of years worked by these industrial arts teachers was 10 years. Eight or 16.3 percent did not respond to this question.

IV. TYPE OF WORK DONE BY RESPONDENTS WHO WORKED IN INDUSTRY

The type of work done by teachers who worked in industry was indicated on Table IV. Of the 227 who stated they had worked in industry, 172, or 40 percent, indicated their experience to be in the building trades. A total of 136, or 31.1 percent, stated they had held jobs in the fields of machining occupations or mechanics-repairman. It should be noted that many respondents held more than one job.

TABLE IV

TYPE OF WORK DONE BY TEACHERS
WHO WORKED IN INDUSTRY

Type of work	Number representing experience of this kind	*Percent
Building Trades	172	40.0
Forge Shop	5	1.1
Machining Occupations	40	9.1
Mechanics-repairman	96	21.0
Electric Power Industry	17	4.0
Foundries	7	1.5
Iron Steel Industry	28	6.4
**Agriculture	4	.9
**Lumber and Related Industries	23	5.2
**Technician	14	3.2
**Transportation	6	1.4
**Pattern Making and Mock-up	10	2.2
***Other	18	4.0
Total	440	

*Percent of the 440 jobs held by the 227 industrial arts teachers that indicated having worked in industry.

**Write in items.

***Where jobs held were not totaling more than two per category, they were placed in this position.

V. RESPONDENTS' OPINIONS REGARDING THE RELATION OF THEIR WORK EXPERIENCE IN INDUSTRY TO AREAS TAUGHT IN INDUSTRIAL ARTS.

Table V shows teachers' opinions regarding the relation of their work experience in industry to areas taught in industrial arts. Of the 227 who had work experience in industry, 111, or 48.9 percent, stated it to be very closely related to their teaching of industrial arts subjects; while 105, or 46.3 percent, felt it to be somewhat related. Eight, or 3.5 percent, stated that their work experience in industry was totally unrelated.

VI. TYPE AND RELATIONSHIP OF WORK EXPERIENCE IN INDUSTRY BY RESPONDENTS THAT HAVE OR NOW HOLD A VALID VOCATIONAL CERTIFICATE

Table VI shows the type and relationship of work experience by industrial arts teachers that have or now hold a valid vocational certificate. Thirty-five, or 71.4 percent, of the 49 teachers felt this experience in industry to be very closely related to their teaching of industrial arts subjects. Fourteen, or 28.6 percent, noted that work experience in industry was somewhat related, while none of the teachers stated it to be totally unrelated to their teaching of industrial arts subjects.

TABLE V

TEACHERS' OPINIONS REGARDING THE RELATION OF THEIR WORK EXPERIENCE IN INDUSTRY TO AREAS TAUGHT IN INDUSTRIAL ARTS

Relation	Number	*Percent
Very Closely Related	111	48.9
Somewhat Related	105	46.3
Totally Unrelated	8	3.5
No Response	3	1.3
Total	227	

*Percent of the 227 teachers who worked in industry.

TABLE VI

THE TYPE AND RELATIONSHIP OF WORK EXPERIENCE IN INDUSTRY BY INDUSTRIAL ARTS TEACHERS THAT HAVE OR NOW HOLD A VALID VOCATIONAL CERTIFICATE

Type of vocational experience	Relative value in regard to work experience			
	Vocational certificate	Very closely related	Somewhat related	Totally unrelated
	Number	Number	Number	Number
Carpentry	6	4	2	0
Vocational Agriculture	6	4	2	0
Drafting	4	4	0	0
Welding	4	3	1	0
Machine Shop	4	3	1	0
Cabinetmaking	3	3	0	0
Metals	3	2	1	0
Aircraft Manufacturing	3	3	0	0
Plaster and Plastics	2	0	2	0
Jig Building	2	1	1	0
*Other	12	8	4	0
Total	49	35	14	0

*Where only one person holds or has held one specific type of vocational certificate.

Twelve, or 24.5 percent, of the 49 teachers indicated having a vocational certificate in the fields of carpentry and vocational agriculture. Eight, or 66.8 percent, felt this experience to be related very closely to their teaching of industrial arts; whereas, 4, or 33.2 percent, stated it to be related somewhat.

A vocational certificate in the fields of drafting, welding and machine shop was held by 12, or 24.5 percent, of the industrial arts teachers. Nine of the 12 respondents indicated their experience was related very closely to their teaching of industrial arts subjects.

The column marked "Other" on Table VI pertains to teachers that hold or have held one specific type of vocational certificate. Eight, or 67 percent, of the 12 marked their industrial work experience as being related very closely to their teaching; while 4, or 33 percent, of this group felt it related somewhat to their teaching of industrial arts subjects.

VII. RESPONDENTS WITH WORK EXPERIENCE IN INDUSTRY CONCERNING THE CONTRIBUTION OF WORK EXPERIENCE IN INDUSTRY TO TEACHING INDUSTRIAL ARTS

Table VII pertains to industrial arts teachers with work experience in industry and how it contributes to their

TABLE VII

INDUSTRIAL ARTS TEACHERS WITH WORK EXPERIENCE IN INDUSTRY CONCERNING THE CONTRIBUTION OF WORK EXPERIENCE IN INDUSTRY TO TEACHING INDUSTRIAL ARTS

Contribution	Very important		Important		Not very important		No response	
	No.	Per-cent	No.	Per-cent	No.	Per-cent	No.	Per-cent
a. Makes me conscious of the importance of time and motion economy.	74	41.6	82	46.1	19	10.7	3	1.6
b. Makes me conscious of the importance of safety and habits and practices.	135	75.8	39	21.9	4	2.3	0	0
c. Fosters and appreciation for good housekeeping and sound shop management.	90	50.6	67	37.6	19	10.7	2	1.1
d. Points out the importance of team work and desirable human relations.	99	55.6	68	38.2	11	6.2	0	0
e. Fosters greater respect for accuracy in work.	100	56.2	70	39.4	4	2.2	4	2.2
f. Provides additional skills useful in my teaching field.	90	50.6	67	37.6	21	11.8	0	0
g. Provides first-hand knowledge of industrial practices.	108	60.6	58	32.7	12	6.7	0	0
h. Provides a better understanding of management.	52	29.2	87	48.9	38	21.3	1	.6

NOTE: Total number of teachers was 178.

teaching of industrial arts. In regard to "making one conscious of the importance of safety and habits and practices," 135, or 75.8 percent, stated this to be very important to their teaching of industrial arts subjects; while 39, or 21.9 percent, marked it important. It is noted that only 4, or 2.3 percent, indicated it to be not very important.

Ninety, or 50.6 percent, stated that work experience in industry "fosters an appreciation for good housekeeping and sound shop mangement." Thirty-seven, or 37.6 percent, felt this experience to be important to the teaching of industrial arts subjects.

"Points out the importance of team work and desirable human relations" was ranked by 99, or 55.6 percent of the respondents who worked in industry, as being very important, and was stated important by 68, or 38.2 percent.

When asked if their work experience fosters greater respect for accuracy in work, 100, or 56.2 percent, indicated it as very important; while 70, or 39.2 percent, stated it to be important.

In responding to "provides additional skills useful in my teaching field," 90, or 50.6 percent, felt this to be very important, and 67, or 37.6 percent, indicated it important.

A total of 108, or 60.6 percent, ranked "provides first-hand knowledge of industrial practices as very important; and 58, or 32.7 percent, thought it to be important.

The lowest percentages were recorded in two categories: (1) "Makes me conscious of the importance of time and motion economy" was indicated very important by only 74, or 41.6 percent, while 82, or 46.1 percent, stated it to be important; and (2) "provides a better understanding of management" was ranked very important by only 52, or 29.2 percent, and was indicated as important by 87, or 48.8 percent. It should be noted that 38,or 21.3 percent, felt this to be not very important.

VIII. VOCATIONALLY CERTIFIED RESPONDENTS' OPINIONS CONCERNING THE CONTRIBUTION OF WORK EXPERIENCE IN INDUSTRY TO TEACHING INDUSTRIAL ARTS

Table VIII shows the 49 respondents who stated that they hold or have held a valid vocational certificate. Forty-one, or 83.7 percent, rated "provides first-hand knowledge of industrial practices" as very important. Seven, or 14.3 percent, stated it to be important.

TABLE VIII

VOCATIONALLY CERTIFIED INDUSTRIAL ARTS TEACHERS' OPINIONS CONCERNING THE CONTRIBUTION OF WORK EXPERIENCE IN INDUSTRY TO TEACHING INDUSTRIAL ARTS

Contribution	Very important		Important		Not very important		No response	
	No.	Per-cent	No.	Per-cent	No.	Per-cent	No.	Per-cent
a. Makes me conscious of the importance of time and motion economy.	26	53.0	18	36.7	5	10.3	0	0
b. Makes me conscious of the importance of safety and habits and practices.	39	79.6	8	16.4	1	2.0	1	2.0
c. Fosters an appreciation for good housekeeping and sound shop management.	30	61.2	18	36.7	1	2.0	0	0
d. Points out the importance of team work and desirable human relations.	31	63.3	17	34.7	1	2.0	0	0
e. Fosters greater respect for accuracy in work.	37	75.5	11	22.5	0	0	1	2.0
f. Provides additional skills useful in my teaching field.	36	73.5	12	24.5	0	0	1	2.0
g. Provides first-hand knowledge of industrial practices.	41	83.7	7	14.3	1	2.0	0	0
h. Provides a better understanding of management.	21	42.9	19	38.8	9	18.3	0	0

NOTE: Total number of teachers was 49.

In response to "makes me conscious of the importance of safety and habits and practices," 39, or 79.6 percent, indicated it to be very important; while 8, or 16.3 percent, felt it to be important.

A total of 37, or 75.5 percent, ranked "fosters greater respect for accuracy in work" as very important to their teaching. While 11, or 22.1 percent, indicated it to be important.

When asked if their work experiences in industry provided additional skills useful in their teaching field, 36, or 73.5 percent, felt it was very important; while 12, or 24.5 percent, stated it to be important.

Two-thirds, or 63.3 percent, indicated that it is very important to their teaching of industrial arts subjects when they encountered team work and desirable human relations in industry.

"Foster an appreciation of good housekeeping and sound shop management" was very important to 30, or 61.1 percent, and important to 18, or 36.7 percent of the respondents.

There were two categories that fell below 55 percent: (1) "Makes me conscious of the importance of time and motion economy," was very important to only 26, or 53 percent of the respondents who had held or now hold a vocational certificate; and (2) "provides a better understanding of

management" was very important to 21, or 42.9 percent, important to 19, or 38.8 percent, and not very important to 9, or 18.3 percent of this same group.

IX. RESPONDENTS' USE OF VOCATIONAL GUIDANCE

One hundred fifty-one, or 85 percent of the 178 teachers who have work experience in industry, use their work experience to counsel students vocationally. Whereas, 47, or 95.9 percent of the 49 industrial arts teachers who have held or now hold a vocational certificate, also use their work experience to counsel students vocationally.

An investigation was made to ascertain if the 49 respondents that stated they held a vocational certificate actually do possess one. The State Division of Vocational Education in Olympia, Washington, was contacted in regard to this matter. It was discovered that 12, or 24.5 percent, of the 49 respondents do not hold a vocational certificate in Washington.

X. RESPONDENTS' COMMENTS

Although there was not a specific comment section on the questionnaire, the following remarks were written, and seem to bring out items that are of relative importance. The remarks will appear as they were written on the questionnaire:

1. I feel every I. A. teacher should have industrial experience prior to the beginning of teaching and should engage in it when not attending summer school to promote constant upgrading. A variety of occupations should be engaged in.

2. I have been teaching for one year now and I feel my industrial experience has been very helpful.

3. It is my firm belief that a teacher really doesn't know what he is talking about until he has had actual work experience in the field in which he is teaching.

4. I lean on my industrial experience to present a true picture of conditions and requirements of industry; to explain in the framework of a regular industrial arts class what training, skills, habits, attitudes and social traits are desirable for success in certain occupations.

5. More teachers should receive on the job training. Would make them more proficient.

6. My work experience in drafting and carpentry has been very valuable to me in my teaching of wood shop.

7. Sounds like a very interesting research. Doing remodeling work has helped in all areas of the teaching I do because of the many related ideas and skills involved.

8. How else can you teach something like this without experience to be very realistic to the students?

9. As this has been a topic of W.I.A.A. Executive Board discussion on several occasions, the association would be interested in the results.

XI. SUMMARY

Teachers without work experience had an average age upon graduation from college of 25.8 years and teachers with

work experience in industry had an average of 24.6 years. There was a variance with teachers who had work experience in industry plus holding a valid vocational certificate, as their average age upon graduation from college was 27.2 years.

It was interesting that there was slightly over six years difference between those teachers with vocational certificates and teachers with no work experience in regards to teaching experience.

Time worked in industry ranged from 5.6 years for those teachers who had work experience in industry to 10 years for those industrial arts teachers with experience plus holding a vocational certificate.

Almost half of the respondents indicated having work experience in the field of building trades; whereas, the other two major categories were machining occupations and mechanics-repairman.

Slightly more than 48 percent of the teachers who had work experience in industry expressed it as being related very closely to their teaching of industrial arts subjects, whereas 46 percent felt it somewhat related and only 3.5 percent marked it as being totally unrelated.

Industrial arts teachers with work experience, plus holding a valid vocational certificate, indicated by a

margin of 70 percent that this experience in industry is related very closely, and 28.6 percent felt it somewhat related to their teaching.

One hundred ninety-eight, or 87.2 percent, of the 227 industrial arts teachers that have work experience in industry are using their experience to counsel students vocationally.

"Makes me conscious of the importance of safety and habits and practices" ranked first among the teachers who had work experience in industry. "Provides a better understanding of management" was ranked lowest among the industrial arts teachers, as it applied to contribution of work experience to teaching industrial arts subjects.

Of the industrial arts teachers that held a valid vocational certificate the one factor that contributed the most to teaching was that "industry provides first-hand knowledge of industrial practices," and the lowest one was "provides a better understanding of management."

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine the relationship of work experience to industrial arts teaching as expressed through a survey.

The sampling included in this study was limited to 300 industrial arts teachers in the State of Washington during the 1968-69 school year.

I. SUMMARY

Age upon graduation from college ranged from an average of 25.8 years for teachers without industrial work experience, to an average of 24.9 years for teachers with work experience, while an average of 27.2 years was recorded for teachers with a vocational certificate, plus experience in industry.

Teachers without work experience had taught on the average of 5.8 years, teachers with work experience in industry had on the average 10.4 years of teaching experience, while those with work experience as well as holding a vocational certificate had an average of 11.9 years of teaching.

The average number of years worked in industry by industrial arts teachers with work experience was 5.6 years. Teachers who worked in industry and held a vocational certificate had an average of 10 years of work experience.

Forty percent of the 227 respondents to the questionnaire stated their work experience in industry to be in the field of building trades. Slightly over 31 percent indicated their experience in industry to be in the fields of machining occupations and mechanics-repairman.

The relationship of work experience to industrial arts teaching was stated to be very close by over 48 percent, or 111 of the 227 that said they had work experience in industry, while 46 percent stated it to be somewhat related.

The teachers that worked in industry and have held or hold a vocational certificate indicated by 71 percent that this experience is related very closely to their teaching of industrial arts subjects. Slightly over 28 percent felt this experience in industry to be related somewhat to their teaching of industrial arts. None of the teachers felt their experience to be totally unrelated to their teaching.

Carpentry and vocational agriculture were among the most popular fields experienced by vocationally certified teachers. Drafting, welding, and machine shop were experienced by slightly more than 24 percent of the respondents.

One statement that was ranked the highest among industries' contributions to the teaching of industrial arts subjects is that it did make teachers conscious of the importance of safety, habits, and practices; whereas the lowest rated contribution to teaching in industrial arts was that industry did not provide better understanding of management.

The highest rated contribution by industrial arts teachers with a vocational certificate was that industry does provide first-hand knowledge of industrial practices in regard to teaching industrial arts. The lowest rated contribution was that industry did not provide a better understanding of management.

It was indicated by at least 85 percent of the teachers that have work experience and/or those teachers holding a vocational certificate that they do use their work experience in industry to counsel students vocationally.

It was found that of the 49 respondents who stated that they held or presently hold a vocational certificate, 12, or 24.5 percent, actually do not hold a certificate according to the records held by the State of Washington.

II. CONCLUSIONS

The respondents involved in this study are representative of the total population of industrial arts teachers

in the State of Washington and, to the extent that facts obtained and opinions expressed are accurate, the following conclusions may be drawn from the study.

It can be concluded that industrial arts teachers that have work experience plus hold or have held a vocational certificate are older upon graduation from college and have been teaching longer than those teachers with or without work experience in industry.

Vocationally certificated industrial arts teachers in the State of Washington have worked, on the average, longer in industry than those teachers that have work experience.

It would appear that 1 percent of the industrial arts programs in the State of Washington are being manned by non-degree teachers. It can be concluded that better recruiting needs to be done by school districts toward the field of industrial education, in order to eliminate a chance of hindering an otherwise good industrial education program.

The industrial arts teachers in the State of Washington that have had work experience in industry have a tendency to work in the area of building trades rather than any other occupation. It was discovered in a study, that wood shop was the most frequently taught industrial arts class in the secondary schools in the State of Washington (14:52). This

fact, and the finding in this study that building trades is experienced by more industrial arts teachers than any other type of work experience, would seem to indicate that industrial arts teachers might be working in a job or industry related to their teaching speciality.

It can be concluded that work experience in industry is related to industrial arts teaching. Therefore, industrial arts teachers should be encouraged to seek employment in industry.

Several industrial arts teachers stated that they hold a valid vocational certificate, but in reality some did not. It is apparent then, that some industrial arts teachers may not completely understand the meaning of a vocational certificate and/or realize that it is valid only for a given length of time. It would seem advantageous that industrial arts teachers in the State of Washington be informed of what the true meaning of a vocational certificate is.

Since a large majority of the industrial arts teachers in the State of Washington are using their work experience in industry to counsel students vocationally, it would seem beneficial for industrial arts teachers to have work experience in order to perform this important aspect of industrial education.

From the findings in this study, it is obvious that industry does contribute in the teaching of industrial arts subjects in the following respects:

1. Makes one conscious of the importance of safety, habits and practices.
2. Fosters an appreciation for good housekeeping and sound shop management.
3. Points out the importance of team work and desirable human relations.
4. Fosters greater respect for accuracy in work.
5. Provides additional skills useful in this teaching field.
6. Provides first-hand knowledge of industrial practices.

III. RECOMMENDATIONS

The following recommendations are offered for the readers' consideration and are based on the findings of this study:

For teachers. Teachers should pursue employment in industry either as part-time or summer employment, since work experience in industry seems to contribute to industrial arts teaching.

For supervisors of industrial arts. Supervisors should make it possible for industrial arts teachers' involvement

in industry since it seems to contribute to the industrial education program.

For colleges and institutions. Colleges and institutions should investigate the possibility of summer employment for industrial education majors in the fields of industry and possibly offer credit so as to motivate prospective teachers to this type of work experience. This might provide the avenue for those prospective teachers to be aware of and up-to-date with safety, shop management, team work, accuracy in work, and industrial practices that are occurring in the world of work.

For the Washington Industrial Arts Association. That the Association should investigate possible ways of better recruitment of industrial education teachers so that some schools will not have to suffer because of uncertified personnel teaching industrial arts.

IV. PROBLEMS FOR FURTHER STUDY

During the course of this study several problems were encountered which might warrant further research. They are as follows:

1. An investigation should be conducted to determine if teachers with industrial experience are having more successful programs in industrial education than those without.

2. An investigation should be conducted to determine the significance of time spent in industry in relationship to industrial arts teaching.

3. Then should investigation prove the validity of industrial experience as a success factor in good industrial arts programs, it would seem advisable to recommend that industrial experience be a required part of teacher training.

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APPENDIX A

QUESTIONNAIRE

EXTENT AND RELATIONSHIP OF WORK EXPERIENCE IN INDUSTRY BY INDUSTRIAL ARTS TEACHERS IN THE STATE OF WASHINGTON

NAME_____
(Last) (First) (Initial)

SCHOOL_____CITY_____STATE_____

DEFINITION: The term, "work experience in industry," as used in this study designates work experience by a person receiving an hourly wage or working under a price-rate system doing direct or indirect production or service work in an industry or craft.

DIRECTIONS: Please provide the information requested by checking the appropriate responses or by filling in the blanks. Those teachers with industrial work experience, please answer all questions.

1. _____ Age upon graduation from college.
2. _____ Total teaching experience in years.
3. _____ Junior high school teaching experience in years.
4. _____ Senior high school teaching experience in years.
5. Yes_____No_____ Have you ever had work experience?
6. Yes_____No_____ Do you use your work experience to counsel your students vocationally?
7. Yes_____No_____ Do you or have you held a valid vocational certificate? If yes, in what field?_____
8. Years___Months_ Total industrial work experience?
9. Please check the type of work experience you have had from the following skilled and other manual occupations:

   a. ( ) Building Trades
   b. ( ) Forge Shop
   c. ( ) Machining Occupations
   d. ( ) Mechanics and Repairman
   e. ( ) Electric Power Industry
   f. ( ) Foundries
   g. ( ) Iron and Steel Industry
   h. ( ) Other (Please Specify)

   _____
   _____

10. In your opinion, to what extent was your work experience in industry related to your present field of teaching? a. ( ) Very closely related
b. ( ) Somewhat related c. ( ) Totally unrelated

11. Rank the following statements and their relative value in regard to work experience and teaching industrial arts. (Check appropriate box)

		Very Important	Important	Not Very Important
a.	Makes me conscious of the importance of time and motion economy.			
b.	Makes me conscious of the importance of safety and habits and practices.			
c.	Fosters an appreciation for good housekeeping and sound shop management.			
d.	Points out the importance of team work and desirable human relations.			
e.	Fosters greater respect for accuracy in work.			
f.	Provides additional skills useful in my teaching field.			
g.	Provides first-hand knowledge of industrial practices.			
h.	Provides a better understanding of management.			

PLEASE MAIL THIS IN THE ENCLOSED ENVELOPE. Thank you.

Gerald J. Smith, Graduate Student
Central Washington State College
c/o Columbia River High School
Vancouver, Washington 98665

P. S. If you would like to receive a copy of the combined results of this questionnaire, check here. _____

APPENDIX B

COVER LETTER

Columbia River High School
Vancouver, Washington 98665
February, 1969

Dear Fellow Industrial Arts Teacher:

I am working on my master's degree and would appreciate your help in filling out the enclosed questionnaire.

The purpose of the form is to determine what work experience industrial arts teachers have had and whether it is related to their teaching of industrial arts.

You have my assurance that any information or opinions supplied will be treated in a confidential manner and will be revealed only in a statistical form or table.

Since I am trying to complete this study as soon as possible, your immediate response would be appreciated.

Very truly yours,

/s/ Gerald J. Smith

Gerald J. Smith

Enclosure: Questionnaire
Return envelope

APPENDIX C

FOLLOW-UP POSTAL CARD REMINDER

COPY OF FOLLOW-UP POSTAL CARD

Dear Fellow Industrial Arts Teacher:

I recently sent you a questionnaire regarding industrial work experience, which I hope will reflect the background of almost all Washington Industrial Arts teachers.

If you have already sent it, thank you. If not, can you mail it today?

Thank you.

Sincerely,

Gerald J. Smith

CENTRAL WASHINGTON STATE COLLEGE

Graduate Division

Final Examination of

Gerald John Smith

B. A., Central Washington State College

1966

for the degree of

Master of Education

Committee in Charge

Dr. Ronald M. Frye

Dr. Donald G. Goetschius Mr. John O. Bakken

Student Union Building

Room 208

Thursday, July 31, 1969

10:00 a.m.

BIOGRAPHICAL INFORMATION

Born: [redacted]

Undergraduate Study

Clark College, 1960-1963.

Portland State College, one summer, 1962.

Western Washington State College, 1963-1964.

Central Washington State College, 1964-1966.
Major: Industrial Arts.

Professional Experience:

Teacher: Junior High School, Vancouver, Washington, March, 1966-1968.

Teacher: High School, Vancouver, Washington, 1968-1969.

Teacher: Junior and Senior High School, Vancouver, Washington, Saturday Enrichment Program, January, 1969-March, 1969.

Certification:

Standard Secondary Certificate.

Additional Training:

Night School Vocational Machine Shop, Clark College, Vancouver, Washington.

Small Gas Engines In-service Class, Vancouver, Washington.

Courses Included in Graduate Study

Required Courses

Education	507	Introduction to Graduate Study
Education	570	Educational Foundations
Psychology	552	Advanced Human Growth and Development
Education	600	Thesis

Courses in Field of Specialization

T-IE	599	Seminar in Industrial Education
T-IE	374	Basic Electronics
T-IE	455	General Metals II
T-IE	550	Advanced Studies in Woodworking
T-IE	466	Architectural Drawing

Additional Courses in Technology and Industrial Education

T-IE	356	Sheet Metal
Crafts	447	Advanced Jewelry

Elective Courses

Psychology	499X	Interpersonal Relations
Psychology	499X	Effective Patterns of Social Progress
Psychology	499X	Group Counseling
Education	547X	Supervision of Student Teachers